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ANNOTATED KEY TO THE ENSIGN WASP (HYMENOPTERA: EVANIIDAE) GENERA OF THE WORLD, WITH DESCRIPTIONS OF THREE NEW GENERA

A. R. Deans and M. Huben

(ARD) Department of Entomology, 320 Morrill Hall, University of Illinois, 505 S. Goodwin Ave., Urbana, IL 61801, U.S.A. (e-mail: adeans@life.uiuc.edu) (MH) 27 Winter St., Arlington, MA 02474, U.S.A. (e-mail: mhuben@world.std.com)

Abstract.—The genus-level taxonomic history of Evaniidae is discussed and three new genera are described: ***Vernevania* Huben and Deans** from the Indian subcontinent with ***V. urbanusorum* Deans, n. sp.**, ***Decevania* Huben** from Central and South America with *D. parva* (Enderlein), **n. comb.**, and *D. striatigena* (Kieffer), **n. comb.**, and ***Rothevania* Huben** from South America with *R. valdiviana* (Philippi), **n. comb**. The genus *Acanthinevania* Bradley is resurrected based on distinctive leg, mesosomal, and mouthpart morphology, raising the total number of valid genera to twenty. The following species are transferred from *Evania*: *Acanthinevania clavaticornis* (Kieffer 1911), **n. comb.**, *A. leucocras* (Kieffer 1911), **n. comb.**, *A. sericans* (Westwood 1851), **n. comb.**, and *A. szepligetiana* (Hedicke 1939) **n. comb.** Sixteen additional genera are also recognized as valid: *Afrevania* Benoit, *Brachevania* Turner, *Brachygaster* Leach, *Evania* Fabricius, *Evaniella* Bradley, *Evaniscus* Szepligeti, *Hyptia* Illiger, *Microevania* Benoit, *Papatuka* Deans, *Parevania* Kieffer, *Prosevania* Kieffer, *Semaeomyia* Bradley, *Szepligetella* Bradley, *Thaumatevania* Ceballos, *Trissevania* Kieffer, *Zeusevania* Kieffer. A key to the genera of the world is provided.

Key Words: ensign wasps, Evaniidae, *Acanthinevania, Vernevania, Rothevania, Decevania*

Despite the frequent collection and recognizable habitus of ensign wasps, there have been very few concentrated efforts directed at improving our understanding of them. The most obvious impediment to further research is the current state of evaniid classification. Since the early 1900's (the height of evaniid taxonomic activity) the amount of ensign wasp research has dwindled. Only one new extant genus has been described since 1953 (Deans 2002), and the last comprehensive taxonomic treatment was Hedicke's (1939) world catalog. However, this catalog does not include keys, and one must resort to Kieffer's (1912) outdated and inadequate monograph as the sole source for species or genus identification.

Several characteristics of evaniid biology make them an interesting group of insects for future research. All verifiable rearings indicate that evaniid larvae develop as solitary egg predators within cockroach oothecae (Roth and Willis 1960, Cameron 1957, Crosskey 1951). This represents a possible method of non-chemical control for pestiferous cockroaches (Thoms and Robinson 1987, Edmunds 1953), but few studies have tested the effectiveness of these wasps. Evaniids also form multifaceted mimicry complexes, particularly in South America,

with distantly related species possessing the same possibly aposematic and/or disruptive color schemes of black, brown, orange, and red. No published research, however, has explored this phenomenon.

Several recent papers have contributed to our understanding of the evolutionary history of the Evaniidae. Basibuyuk et al. (2000a, b, 2001) describe extinct genera and how they shape our understanding of modern evaniids. Dowton and Austin (2001), Dowton et al. (1997), and Ronquist et al. (1999), among many others, discuss the yet unresolved relationship of Evaniidae to the rest of the Hymenoptera.

The purpose of this paper is to describe three new genera, two from South America (*Decevania* and *Rothevania*) and one from the Indian subcontinent (*Vernevania*), and to resurrect *Acanthinevania* Bradley. We also provide an illustrated key to the genera of the world. This is not meant to be a full revision but instead is intended as a starting point for researchers or budding evaniid taxonomists interested in determining specimens to genus as the genera are currently defined. Ongoing detailed morphological and molecular analyses by ARD into the generic limits, phylogenetic relationships of the genera, as well as how the Evaniidae relate to the rest of the Hymenoptera may improve our understanding of this enigmatic family.

Taxonomic history

The taxonomic instability within the Evaniidae has been well established, and most publications (1900–present) include one or two sentences bemoaning this fact. Frison (1922) divided the problems into several categories, which still apply today. First, nearly all species were described from only one or two specimens, allowing no discussion of variation. Color patterns can vary within a particular species, and it is possible that these color morphs have been described as separate species. Second, they are sexually dimorphic (usually in antennal morphology, body coloration, facial sculpture, and/or metasomal morphology) and difficult to associate; some described species may actually represent the opposite sex of other species. Third, most holotypes are difficult to find. Kieffer described most of the evaniid species but rarely designated holotypes or mentioned their depository. Compounding this problem is the fact that nearly all the original descriptions are vague and could actually apply to multiple closely related species. Frison (1922) also noted that the number and limits of the evaniid genera were disputed and difficult to rectify.

Table 1 summarizes the history of genus-level classification for the Evaniidae based on the largest, most complete monographs. Schletterer (1889a, b) provided the first comprehensive treatment of world species, collapsing the three known genera into a single genus, *Evania* Fabricius. Bradley (1908) added three new genera and reassigned species *non viso*. He based his taxonomic scheme on several wing venation and non-wing characters (e.g., metasoma shape, antenna, leg, tarsal claw, and mouthpart morphology, shape of the "furculum" between hind coxae). Kieffer (1912), in an unfortunate step backwards, reclassified the evaniids solely on wing venation characters. He synonymized *Acanthinevania*, *Evaniella*, and *Szepligetella* under *Evania*, and *Semaeomyia* under *Brachygaster*. Hedicke's (1939) world catalog largely followed Kieffer's (1912) classification but included all the genera and species described between 1912–1939.

Several synapomorphies define the Evaniidae. The most recognizable are the high insertion of the metasoma (Figs. 1–2) and the thin tubular shape of the petiole (Figs. 3–5) giving these wasps their characteristic habitus. Most species also have 11 flagellomeres (except *Decevania* spp. have 8; Fig. 1) and hind wings with greatly separated jugal lobes (Figs. 6–8) (except some *Evaniella* and *Prosevania* spp. <2.5 mm long). All evaniid rearings have been from

Table 1. Taxonomic history of the Evaniidae.

Genus (Year Described)	Schletterer (1889)	Bradley (1908)	Kieffer (1912)	Hedicke (1939)	Current (2003)
Evania (1775)	*Evania*	*Evania*	*Evania*	*Evania*	*Evania*
Hyptia (1807)	(syn. *Evania*)	*Hyptia*	*Hyptia*	*Hyptia*	*Hyptia*
Brachygaster (1817)	(syn. *Evania*)	*Brachygaster*[1]	*Brachygaster*	*Brachygaster*	*Brachygaster*
Zeuxevania (1902)		*Zeuxevania*	*Zeuxevania*	*Zeuxevania*	*Zeuxevania*
Evaniscus (1903)		*Evaniscus*	*Evaniscus*	*Evaniscus*	*Evaniscus*
Evaniellus (1905)		*Evaniellus*	*Evaniellus*	*Evaniellus*	(syn. *Hyptia*)[2]
Parevania (1907)		(sub.g. *Zeuxevania*)	*Parevania*	(sub.g. *Zeuxevania*)	*Parevania*[3]
Acanthinevania (1908)		*Acanthinevania*	(syn. *Evania*)	(syn. *Evania*)	*Acanthinevania*
Evaniella (1908)		*Evaniella*	(syn. *Evania*)	*Evaniella*	*Evaniella*
Semaeomyia (1908)		*Semaeomyia*	(syn. *Brachygaster*)	(sub.g. *Brachygaster*)	*Semaeomyia*[2]
Szepligetella (1908)		*Szepligetella*	(syn. *Evania*)	*Szepligetella*	*Szepligetella*
Chalcidopterella (1909)			*Chalcidopterella*	*Chalcidopterella*	(syn. *Hyptia*)[2]
Prosevania (1911)			*Prosevania*	(sub.g. *Evania*)	*Prosevania*[3]
Trissevania (1913)				*Trissevania*	*Trissevania*
Brachevania (1927)				*Brachevania*	*Brachevania*
Thaumatevania (1935)				*Thaumatevania*	*Thaumatevania*
Microevania (1952)					*Microevania*
Afrevania (1953)					*Afrevania*
Papatuka (2002)					*Papatuka*
Decevania (2003)					*Decevania*
Rothevania (2003)					*Rothevania*
Vernevania (2003)					*Vernevania*

[1] Bradley (1908) used the name *Semaedogaster* in place of *Brachygaster*.
[2] Huben (1995) synonymized *Evaniellus* and *Chalcidopterella* under *Hyptia* and raised *Semaoemyia* to genus level.
[3] Mani and Muzaffer (1943) raised to genus level.

cockroach egg cases, and it is assumed that this represents a synapomorphic lifestyle.

Key to World Genera of Evaniidae

The Evaniidae would benefit enormously from a worldwide family-level revision. The limits between certain genera are not well defined, and we are aware of a few specimens that still do not key to the correct genus. These rare exceptions are discussed under each genus.

Wing venation varies greatly within the family and provides the most useful characteristics for distinguishing genera. Unfortunately, ensign wasps are prone to wing venation aberrations (usually missing or extra veins; see Mani and Muzaffer 1943) which may lead one to inappropriate couplets. Also helpful are head shape/sculpturing, tarsal claw morphology, metasoma shape, and female genitalia morphology. Qualifying terms are used to estimate the number of specimens displaying a particular character based on material examined (~7,000 specimens): sometimes (<50%), often (50–75%), or usually (75–99%). Wing veins disrupted by a fold (e.g., claval fold) are considered complete veins. The key is intended for both sexes, but some couplets contain additional information regarding female-specific characters. Morphological terminology used in the descriptions and keys follows that of Huber and Sharkey (1993), and wing venation terminology (Figs. 6–7) was adapted from Sharkey and Wharton (1997).

1. Wings absent or reduced, apex never reaching past petiole if present 2
– Wings present, extending past petiole 4
2. Brachypterous; wing with 7 complete cells, apex (portion without tubular veins) <33% of total wing (Fig. 10) . . . . . *Brachevania* Turner [Ethiopia: 1 described species represented by 1 specimen; the only brachypterous evaniid.]
– Apterous 3
3. Antenna 10-segmented (Fig. 1); hind tarsomeres (at least) with extended apical projections (Fig. 1); total length <4 mm; New World . . . . . *Decevania* Huben (in part) [At least one undescribed wingless species from Ecuador.]

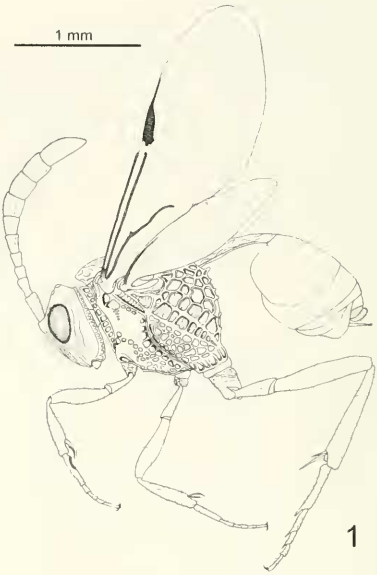


Fig. 1. *Decevania* sp., typical habitus.

– Antenna 13-segmented (as in Fig. 2); tarsomeres without extended projections; total length >5 mm; Old World . . . . *Papatuka* Deans [Kenya; currently 1 described species represented by 1 specimen; label suggests it was reared from a *Dasyproctus westermanni* (Dahlbom) (Sphecidae) nest (Deans 2002). At least one undescribed species exists from South Africa.]
4. Forewing with at least 6 cells enclosed by tubular or nebulous veins (Figs. 2, 6–8, 11–14) 5
– Forewing with 1–3 cells enclosed by tubular veins (Figs. 1, 9, 15–19) 15
5. Distance between mid- and hind coxa nearly equal to distance between fore- and midcoxa (Fig. 20), midcoxa never touching hind coxa when projected posteriorly; genae never uniformly strigate or costate 6
– Distance between mid- and hind coxa 0.6× or less the distance between fore- and midcoxae (Fig. 21), midcoxa often touching hind coxae when projecting posteriorly; genae variable 7
6. Forewing RS+M missing, fusing 1st submarginal and 1st subdiscal cells (Fig. 11); head in lateral view hemispherical (Fig. 22); anten-

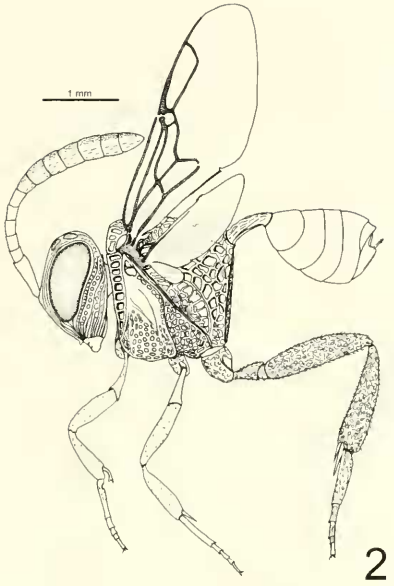


Fig. 2. *Vernevania urbanusorum*, habitus.

nae arising at midheight of head; ovipositor short, completely hidden within metasoma; female metasoma in lateral view circular or ovoid (Fig. 5); New World . . . . . *Evaniscus* Szepligeti

[New World tropics; small genus of medium sized ensign wasps with 4 described and a few undescribed species; rarely collected.]

– Forewing RS+M present separating 1st submarginal and 1st subdiscal cells (near Fig. 8); head in lateral view slightly compressed (Fig. 23); antennae arising on upper third of head; ovipositor long, usually visible; female metasoma in lateral view triangular with metasomal tergite 8 expanded dorsally (Fig. 3); worldwide . . . . . *Evania* Fabricius

[Worldwide; includes the cosmopolitan and frequently collected and studied *E. appendigaster* (L.) 1758; other species are found throughout the Old World and Central America; characterized by their long hind legs, widely separated coxae, somewhat flattened faces, and large size; nearly half of all evaniid species are currently assigned to this genus; further examination of types will likely result in reassignment for most of these species into *Evaniella*, *Parevania*, *Prosevania*, *Acanthinevania*, and *Szepligetella* (Townes 1949).]

7. Hind tibia and tarsus (at least) with evenly distributed long, prominent, erect spines, >2× the length of hind leg setae (Fig. 29); female metasomal tergite 8 usually expanded dorsally (near Fig. 3); ovipositor usually long, exposed; Pacific islands and Australasia 8

– Hind tibia and tarsus without prominent spines, or with spines <2× the length of hind leg setae distributed only on posterior portion of tibia (Figs. 30–31); metasoma (female) in lateral view often circular or ovoid (Figs. 4–5); ovipositor often short, concealed within metasoma; worldwide except Australia 9

8. Head never elongate (always semicircular in lateral view) (near Fig. 22); labial palp segment 3 swollen, semicircular to circular (Fig. 25); glossa usually hidden (depends on preservation); labium broad and flat or slightly folded anteriorly, never elongate; propodeal area ventral to petiole often concave . . . . . *Szepligetella* Bradley

[Australasia, Pacific Islands; most species with concave depression posterior/ventral to the petiole; currently only 1 described species, with many incorrectly assigned to *Evania* or undescribed. All species from Australia currently belong in either *Szepligetella* or *Acanthinevania*.]

– Head usually elongate (Fig. 27); labial palp without swollen segments (Fig. 26); glossa exposed, semicircular, nearly bilobed (Figs. 26–27); labium folded strongly anteriorly, appearing long and narrow; propodeal area ventral to petiole flat or convex . . . . . *Acanthinevania* Bradley

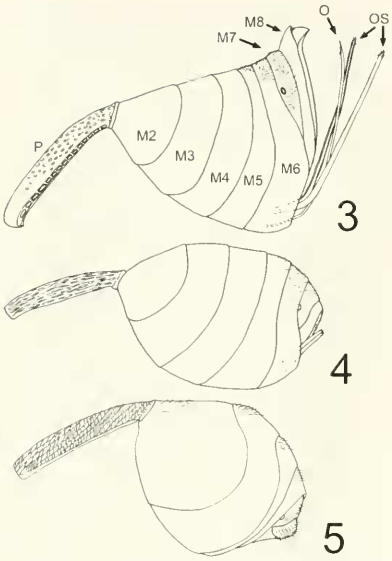
[Australia; erroneously synonymized with *Evania* by Kieffer (1912); differs from *Evania* by the mid- and hind coxae close together, the hind tibia (at least) with long, erect spines, and elongate mouthparts with an exposed glossa; currently 6 described species, with many incorrectly assigned to *Evania* or undescribed. All species from Australia currently belong in either *Szepligetella* or *Acanthinevania*.]

9. Forewing with 6 complete cells (Figs. 12–14) 10

– Forewing with 7 complete cells (Fig. 2, 6–8) 12

10. Forewing 1RS missing, fusing basal and 1st submarginal cells (Fig. 12); head often appearing globular in lateral view (Fig. 24) . . . . . *Zeuxevania* Kieffer

[Old World; 10 described species largely united by the characteristic wing venation; may



Figs. 3–5. Female metasomas, P = petiole, M2–8 = metasomal segments 2–8, O = ovipositor, OS = ovipositor sheath. 3, *Evania albofascialis* Cameron. 4, *Parevania atra* Kieffer. 5, *Evaniscus rufithorax* Enderlein.

be related to *Parevania* (Bradley 1908); in some species females have extended metasomas (posterior to the petiole), and both males and females possess a wide space between the hind coxae.]

– Forewing 1RS present, separating basal and 1st submarginal cells (Figs. 13–14); head usually appearing semicircular (near Fig. 22) or flattened in lateral view 11

11. Forewing 2cu-a absent, opening 1st subdiscal cell distally (Fig. 13); 4RS complete; stigma not enlarged; foreleg tarsomere 1 not expanded distally; costate sculpturing forming irregular circles around antennal sockets in some species (Fig. 34); Madagascar . . . . . *Microvania* Benoit

[Madagascar; 2 rarely collected described species; recognized by their small size (<2.5 mm), characteristic wing venation, and antero-posteriorly flattened heads. South American specimens keying here do not have circular sculpturing on the frons and currently belong in *Evaniella*.]

– Forewing 2cu-a present (1st subdiscal cell completely enclosed) (Fig. 14); 4RS incomplete; stigma enlarged; foreleg tarsomere 1 expanded distally into a long spine (Fig. 28); no costate sculpturing forming circles around antennal sockets; northern Africa and the Middle East . . . . . *Thaumatevania* Ceballos

[Morocco and Israel; only 2 specimens known, both with characteristic wing venation, extended foreleg tarsomere 1, and enlarged stigma.]

12. Gena (at least) costate or strigate (Fig. 35), sometimes irregularly (may be difficult to see in specimens <2.5 mm) 13

– Gena nitid, setose, punctate, and/or foveolate 14

13. Legs relatively short, <3× as long as mesosoma height (Fig. 2); forewing 2M, 3M, 3CU missing or spectral, 1M clearly separated from Sc+R (Fig. 2); marginal cell elongate (~4× wider than high); Indian subcontinent . . . . . *Vernevania* Huben and Deans

[Sri Lanka and India; 1 described species and at least 1 undescribed; compact habitus with short legs suggests a close relationship to *Brachygaster*.]

– Legs relatively long, >3× as long as mesosoma height; forewing 2M, 3M, 3CU usually present as nebulous veins, 1M often parallel and close to or convergent with Sc+R (Fig. 8); marginal cell not elongate (~2× wider than high); Old World . . . . . *Prosevania* Kieffer

[Old World; currently includes the cosmopolitan and frequently collected *Prosevania fuscipes* (Illiger) 1807, which probably does not belong in this genus; species recognized by the costate/strigate facial sculpturing and the metapleuron with a broad flat area extending dorsally to an elongate furrow immediately ventral to the wings (Fig. 38), and the somewhat elongate 1st discal cell which often runs parallel to the wing margin; some species with short spines posteriorly on hind legs; most Malagasy *Parevania* spp. have strigate facial sculpturing but not the other characteristics of *Prosevania*.]

14. Forewing 1RS usually attached to Sc+R basal to the stigma and curved slightly toward wing base (Fig. 6); hind wing M+CU often as long as hind jugal lobe; Old World . . . . . *Parevania* Kieffer

[Old World; similar to *Evaniella*; Kieffer's (1912) description based solely on the inconsistent attachment of 1RS (often nebulous) to Sc+R basal to the stigma; Bradley (1908) treated as subgenus of *Zeuxevania*; 20 described species with several undescribed or assigned to *Evania*; most Malagasy species have strigate facial sculpturing but not the

other characteristics of *Prosevania*; Australian species keying to this couplet probably belong to *Szepligetella*.]

– Forewing 1RS attached to Sc+R at stigma, usually linear (Fig. 7); hind wing M+CU often shorter than hind jugal lobe; New World . . . . . *Evaniella* Bradley
[New World; a frequently collected and extremely diverse genus with many undescribed species; at least 19 described species with many more still assigned to *Evania*; Australian species keying to this couplet probably belong to *Szepligetella*.]

15. Forewing with 1 complete cell (Figs. 1, 17); New World 16
– Forewing with 2–3 complete cells (Figs. 9, 15–16, 18–19); worldwide 17

16. Antenna 10-segmented (Fig. 1); notauli present (at least as row of depressions); hind tarsomeres 1–3 elongated posteriorly into spines (Fig. 1) . . . . . *Decevania* Huben (in part)
[New World; characterized by small eyes (Fig. 36) and 8 flagellomeres (Fig. 1); collected throughout Central and Northern South America, often at high altitudes; 2 described and at least 6 undescribed species.]
– Antenna 13-segmented (as in Fig. 2); notauli absent in most specimens; hind tarsomeres not elongated into spines . . . . . *Hyptia* Illiger
[New World; an extremely diverse genus with 49 described species and many more undescribed; wing venation extremely reduced (Fig. 17), resulting in a single complete cell; synonyms *Chalcidopterella* Enderlein and *Evaniellus* Enderlein were based on the variable forewing M+CU length.]

17. Forewing 1st marginal cell complete (Fig. 19) . . . . . *Trissevania* Kieffer
[Africa; rarely collected; 1 described species with distinct wing venation; wings often folded apically as in *Afrevania* (see next couplet).]
– Forewing 1st marginal cell absent 18

18. Forewing with 2 complete cells (costal and basal), 4RS present, tubular (Fig. 18); forewing long and floppy, folded back on itself apically (depending on preservation, may be expanded apically) . . . . . *Afrevania* Benoit
[Africa; 1 rarely collected described species; characteristic floppy wings are usually folded apically; very similar morphologically to *Trissevania* (previous couplet) except wing venation.]
– Forewing with 3 complete cells (costal, basal, and subbasal), 4RS absent (Figs. 9, 15–16); forewing variable, but never naturally folded back on itself 19

19. Forewing 4RS and r-m present as spectral veins (Fig. 15); legs relatively short, hind leg <2.5× mesosoma height; notauli often absent (may be present as thin furrow or slight depression in some species); entire body densely foveolate; Old World . . . . . *Brachygaster* Leach
[Old World and Australia; wing venation and compact habitus with short legs characteristic; a common European species, *B. minuta* (Oliver), has been studied extensively; at least 7 described with a few undescribed species; Bradley (1908) erroneously renamed this genus *Semaedogaster*.]
– Forewing 4RS, and r-m absent; legs relatively long, hind leg >2.5× mesosoma height; notauli present; body variously sculptured; New World 20

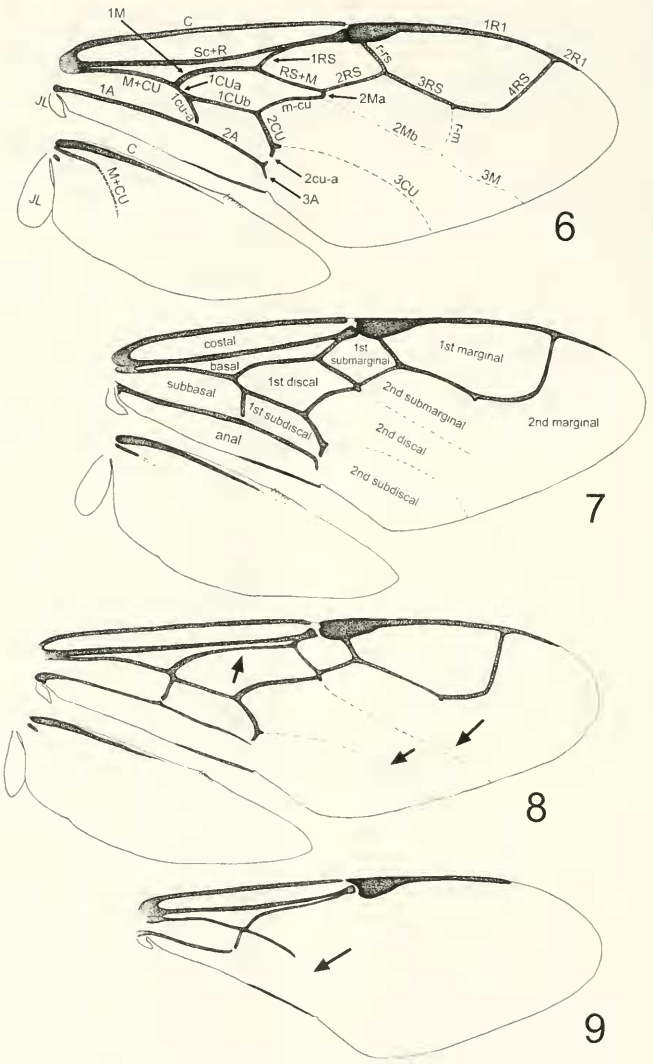
20. Forewing 1CU+2CU vein ending before claval fold (Fig. 9); tarsal claws with apical tooth more prominent subapical tooth (Fig. 32) . . . . . *Rothevania* Huben
[Chile and Argentina; similar to *Semaeomyia* and *Brachygaster*; 1 described and at least 3 undescribed species.]
– Forewing 1CU+2CU vein reaching claval fold (Fig. 16); tarsal claws with sub-apical tooth more prominent than apical tooth (Fig. 33) . . . . . *Semaeomyia* Bradley
[New World tropics; extremely diverse in morphology, size, and number of species; 38 described and many undescribed species.]

Chalcidopterella Enderlein, *Evaniellus* Enderlein

Huben (1995) included these two genera in *Hyptia*. They are morphologically identical to *Hyptia* except for the length of the forewing M+CU; *Chalcidopterella* has a short and nebulous or spectral M+CU, and in *Evaniellus* the M+CU is absent (Kieffer 1912). Wing venation within any genus of Evaniidae varies slightly, and the synonymy of these two genera with *Hyptia* is justified.

Semaeomyia Bradley

Semaeomyia was treated as a subgenus of *Brachygaster* (including all its New World species) by Hedicke and as a genus by Huben (1995). *Semaeomyia* differs from *Brachygaster* in at least the following characters: forewing venation never with spectral 4RS and r-m, tarsal claws with subapical tooth more prominent than apical tooth, and legs relatively long. This morphologically diverse taxon should be treated as a genus.



Figs. 6–9. Wings, arrows on 8–9 indicate diagnostic characters. 6, *Parevania* sp. with wing veins labeled. 7, *Evaniella* sp. with wing cells labeled. 8, *Prosevania* sp. 9, *Rothevania valdivianus* (Phillippi), forewing.

Acanthinevania Bradley
(Figs. 26–27, 29)

Type species.—*Evania princeps* Westwood 1841, original designation.

Diagnosis.—Medium to large with black or black and red color pattern. Head with elongate gena, mouthparts elongate and exposed (depends on preservation), palps without swollen segments, head deeply concave posteriorly, forewing veins enclosing 7 complete cells, hind tibia (at least) with long spines.

Description.—Length from head to metasoma varies between 4.0–14.0 mm. Color always black or a pattern of black and orange or red. Head appearing somewhat elongate with gena 0.5–1.0× as long as eye height. Face sculptured with elongate foveae (Fig. 27). Posterior portion of head concave, often greatly so. Mouthparts usually exposed revealing glossa and palps, appearing elongate (Fig. 26) due to long labium. Palps never with swollen segments. Maxillary palpus 5-segmented and labial palpus 4-segmented. Antenna 13-segmented. Mesosoma boxlike and usually densely foveolate except for small nitid area dorsally on mesopleuron and areolate or areolate-rugose metapleuron. Pronotum and mesoscutum square in dorsal view. Propodeal area ventral to insertion of petiole flat or very slightly concave. Metasternum expanded posteriorly into forked projection (furculum) with two short, slightly divergent tines. Legs relatively long, hind leg at least 2.5× longer than mesosoma height with at least hind tibia and tarsomere 1 spiny (Fig. 29). Leg spines at least 2.0× longer than tibial setae. Tarsal claws relatively elongate and straight with one subapical tooth medially (similar to Fig. 32). Wing venation similar to *Szepligetella* and *Evaniella* (Fig. 7). Apical edge of forewing with numerous wrinkles. Hind wing with 7–16 hamuli depending on body/wing size. Metasoma similar in shape to Fig. 3 with expanded apical segment. Ovipositor straight, as long as posterior edge of metasoma.

Biology.—Unknown, probably solitary egg predators within cockroach oothecae.

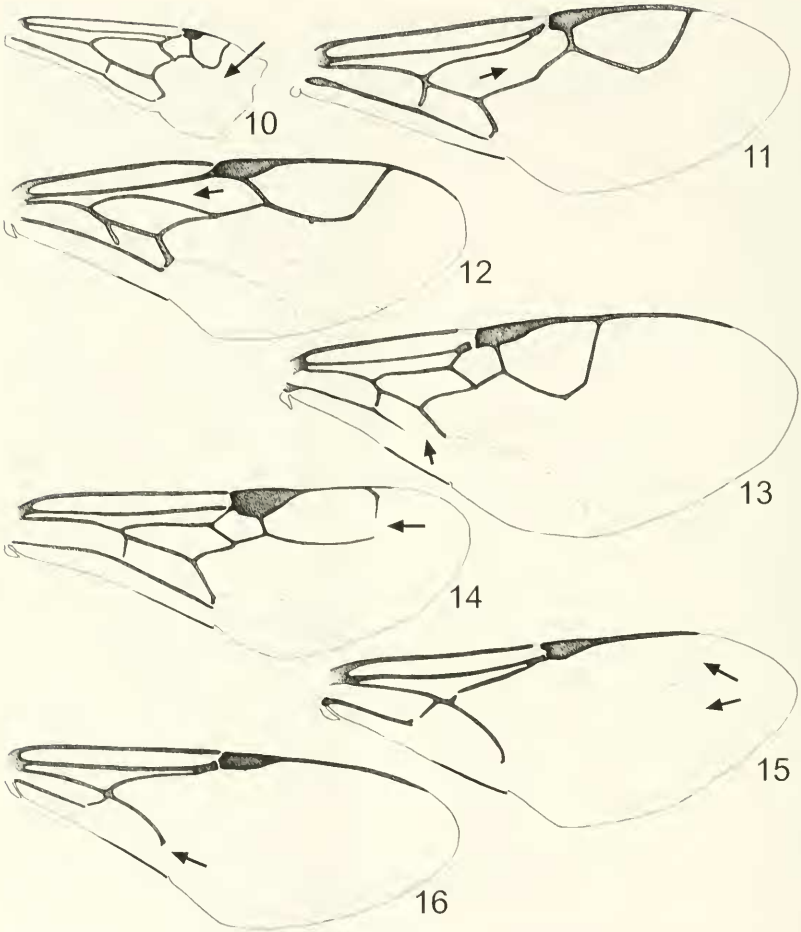
Comments.—Morphologically, *Acanthinevania* differs greatly from *Evania* and deserves to be reinstated as a genus. *Acanthinevania* possesses the following characters not present in *Evania*: head greatly concave posteriorly, mouthparts elongate with glossa exposed, palpi without swollen segments, mid- and hind coxae closer together than mid- and forecoxae, and hind tibia (at least) with long spines.

Based on our examination of holotypes deposited in The Natural History Museum in London we reassign the following species (**new combinations**, all originally described in *Evania*): *Acanthinevania clavaticornis* (Kieffer 1911), *A. leucocras* (Kieffer 1911), *A. rufiventris* (Kieffer 1911), *A. sericans* (Westwood 1851), and *A. szepligetiana* (Hedicke 1939) (deposited in the Cornell University Insect Collection, Ithaca, New York). The holotype for *Evania princeps* Westwood 1841 probably has been lost or destroyed. Our intepretation of this species is based on determined material from the Muséum National d'Histoire Naturelle, Paris, and the Cornell University Insect Collection; *A. princeps* is also the type species. Bradley (1908) assigned many species to this genus without examining the holotypes or properly determined material; many of these species belong to other genera. There are undoubtedly more described and undescribed species that belong in *Acanthinevania*, including one undescribed species from Chile.

***Decevania* Huben, new genus**
(Figs. 1, 36)

Type species.—*Hyptia striatigena* Kieffer 1910.

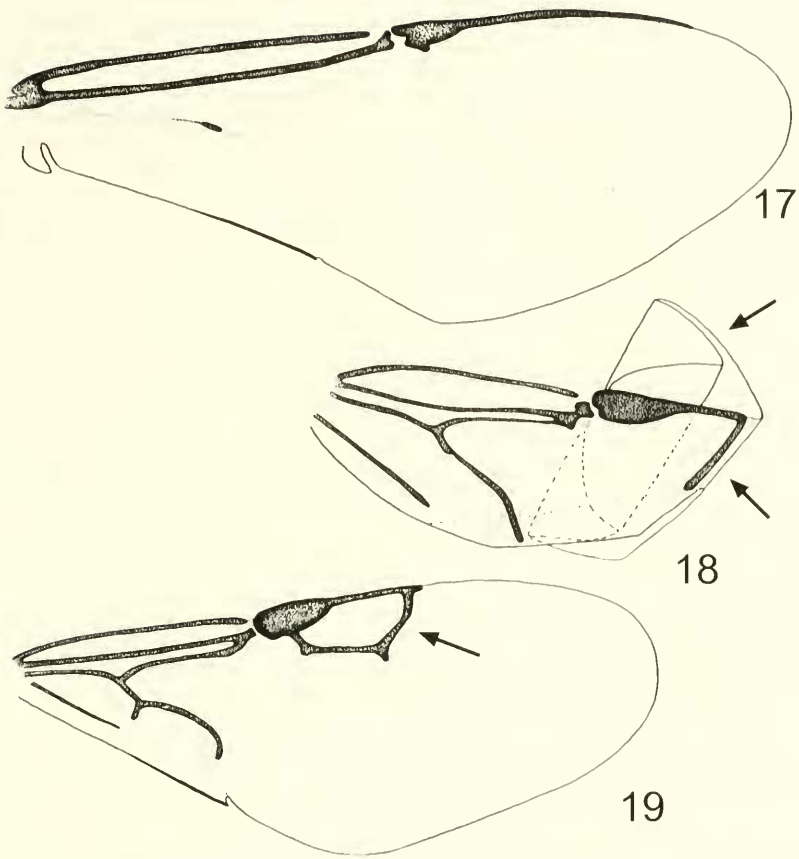
Diagnosis.—Small to minute and brown to dark brown. Head with relatively small eyes, antenna 10-segmented, wings long and floppy, forewing veins enclosing 1



Figs. 10–16. Forewings, arrows indicate diagnostic characters. 10, *Brachevania kristenseni* Turner. 11, *Evaniscus* sp. 12, *Zeuxevania* sp. 13, *Macrevania difficilis*. 14, *Thaumatevania* sp. 15, *Brachygaster* sp. 16, *Semaeomyia* sp.

complete cell, hind tarsomeres 1–3 (at least) projected apically into long spines.

Description.—Habitus antlike, minute (1.8–3.0 mm in length), dark brown. Sparse, long setae cover most of body and legs. Eye usually reduced to 0.5× or less head height. Face striated between eyes and mandibles. Gena with a carina extending from just outside eye to mandible. Postgenal area flat and nitid. Antenna 10 segmented, arising from just above the center of the face. Mandible with two teeth. Maxillary



Figs. 17–19. Forewings, arrows indicate diagnostic characters. 17, *Hyptia* sp. 18, *Afrevania* sp. 19, *Trissevania* sp.

palpus 4–5-segmented, labial palpus 3–4-segmented. Anterior surfaces of pronotum and mesonotum together flattened and nitid. Notauli distinct. Mesopleuron medially impunctate. Dorsal margin of mesopleuron with a sharply acute triangular areolate region bounded by a prominent ridge with a row of punctures on other side. Mesosoma otherwise coarsely punctured, areolate, or foveate everywhere except dorsomedially. Hindleg tarsomeres 1 to 3 (at least) each laterally compressed with a ventral carina and a distal spine. Rarely apterous. Wings delicate, sometimes with a large stigma, and often crumpled in dried specimens. Veins C, Sc+R, M+CU, 1CUa, 1CUb brown and tubular. Gaster nitid except for setae on genitalia. Ovipositor straight, short, usually partly concealed within gaster.

Etymology.—The genus name refers to

the 10-segmented antennae; gender, feminine.

Comments.—This new genus is described based on the following synapomorphies not present in *Hyptia*: 8-segmented flagellum, relatively reduced eyes, oversized, floppy wings, and posteriorly expanded hind tarsomeres 1–3. *Hyptia parva* Enderlein 1901 and *H. striatigena* Kieffer 1910 are reassigned: *Decevania parva* (Enderlein), **n. comb.**, and *D. striatigena* (Kieffer) **n. comb.** Holotypes for *D. striatigena* and *D. parva* were examined and are deposited in Museum für Naturkunde der Humboldt Universität, Berlin, Germany. *Decevania* is entirely Neotropical and is often collected at remarkably high altitudes (over 5,000 m) but can also be collected at sea level. Previously referred to as "Genus D" by Huben (1995).

Rothevania Huben, new genus

(Figs. 9, 32, 37)

Type species.—*Brachygaster valdiviana* Philippi 1871.

Diagnosis.—Small and black or black and orange. Forewings with 1CU+2CU vein ending before claval fold, forewing veins enclosing 3 complete cells, tarsal claws with apical tooth more prominent sub-apical tooth.

Description.—Length from head to metasoma 3.5–4.5 mm. Black to nearly entirely red. Head round in frontal view, ovoid in dorsal view. Frons and facial area surrounding antennae setose with crowded small punctures. Distinct lateral carinae on face extend from near eyes to above mandibles. Antenna with 13 segments, inserted centrally. Eye oval, slightly narrowed dorsally. Mandible setose, with 2 teeth. Anterior pronotum, mesonotum, and propleuron minutely punctate or ridged. Pronotum and mesonotum rounded anteriorly, without a sharp transverse ridge. Notauli present, distinct. Mesopleuron with an irregular band of transverse punctures or striae from anterior-dorsal corner medially to center. Apical tooth of tarsal claws more prominent than subapical tooth. Wings hyaline, setose. Veins C, Sc+R, M+CU, 1M, 1RS, 1CUa, 1CUb, 1A, 1cu-a, 2CU brown and tubular. 2CU much shortened, not reaching claval fold. Metasomal tergite 1 relatively long. Gaster circular in lateral view, concealing ovipositor in female. Ovipositor short, thin, straight.

Etymology.—This genus is named in honor of the late Dr. Louis M. Roth, a lifelong student of cockroaches; gender, feminine.

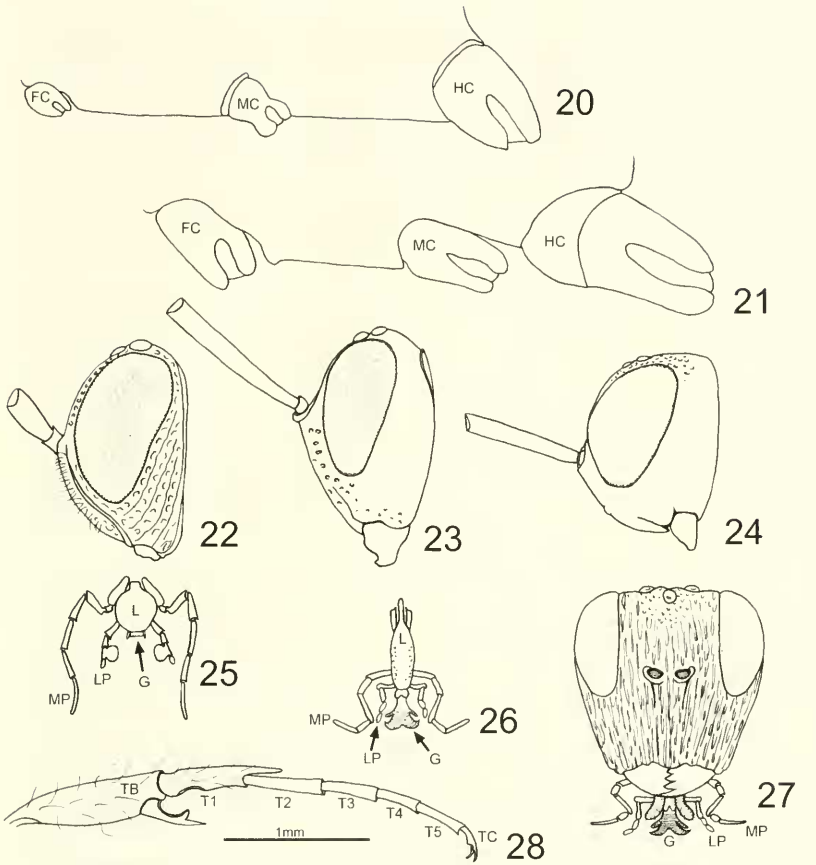
Comments.—*Rothevania* is separated from *Semaeomyia* by the unique wing venation and tarsal claw morphology. This genus is Valdivian in distribution, known only from Chile and Argentina. One specimen, labeled "Hardwar Gap, Jamaica," may represent another species and a curious range extension or a mislabeling. *Rothevania valdiviana* (Philippi) is a **new combination.** The holotype of *R. valdiviana* could not be located. The decision to describe a new genus for this species is based on the original description and examination of determined material at the American Entomological Institute (22 specimens), the California Academy of Sciences (16 specimens), and the Florida State Collection of Arthropods (119 specimens).

Verneyania Huben and Deans, new genus

Type species.—*Vernevania urbanusorum* Deans, new species.

Diagnosis.—Small and brown to dark brown. Head relatively large, with costate sculpturing dorsal to the eyes, mesosoma compact, forewing with elongate 1st discal and 1st marginal cells, forewing veins enclosing 7 complete cells.

Description.—Female: Length from head to metasoma 3.0–4.0 mm. Dark brown to black. Head circular in frontal view, semicircular in dorsal view. Frons and facial area surrounding antennae sparsely setose and densely foveolate. Clypeus forming a central projection extending over mandibles. Area surrounding



Figs. 20–28. Evaniid morphological characters. FC = forecoxa, MC = midcoxa, HC = hind coxa, L = labium, LP = labial palpus, MP = maxillary palpus, G = glossa, TB = tibia, T1-T5 = tarsomeres 1–5, TC = tarsal claw. 20, *Evaniscus* sp., coxal spacing. 21, *Parevania* sp., coxal spacing. 22, *Evaniscus rufithorax*, head. 23, *Evania dimidiata*, head. 24, *Zeuxevania* sp., head. 25, *Szepligetella* sp., mouthparts, posterior view. 26, *Acanthinevania* sp., mouthparts, posterior view. 27, *Acanthinevania* sp., head. 28, *Thaumatevania* sp., foreleg tibia and tarsomeres.

lower 0.5 of eyes costate. Gena striate ventrally, becoming costate-foveolate dorsally. Mandible slightly setose with 3 teeth. Maxillary palpus 5-segmented, elongate and thin. Labial palpus 4-segmented, segment 2 slightly swollen and semicircular. Antenna with 11 flagellomeres, swollen slightly after flagellomere 5, arising midway on face. Mesosoma compact, mostly foveolate. Notauli present as slight impressions (difficult to see). Metanotum forming thin irregularly scrobiculate band. Mesopleuron expanded,

convex, nitid dorsally within leg groove. Propodeum areolate. Legs coarsely punctate, relatively short. Coxae coarsely foveolate. Tarsi strongly tapering with tarsomere 1 as long as tarsomeres 2–5 combined. Tarsal claws with two teeth of equal size. Wing venation characteristic (Fig. 2). Petiole (metasomal tergite 1) rugose-punctate dorsally, nitid ventrally. Metasomal tergites 2–8 forming ovoid gaster. Hypopygium extended with expandable pleats apically. Ovipositor short, partially concealed within gaster. Ovipositor sheath with small cluster of short, stiff setae apically.

Male: Similar to female except flagellomeres slightly elongate and never swollen.

Etymology.—This genus is named in honor of the late Verne Pechuman, Cornell University, mentor to MH; gender, feminine.

Comments.—*Vernevania* closely resembles *Brachygaster* in habitus, possessing a relatively large head, short legs, and coarse body sculpturing. However, *Vernevania* has a relatively full complement of wing veins arranged in a unique pattern with elongate 1st marginal and 1st discal cells.

Vernevania urbannsorum Deans, new species
(Fig. 2)

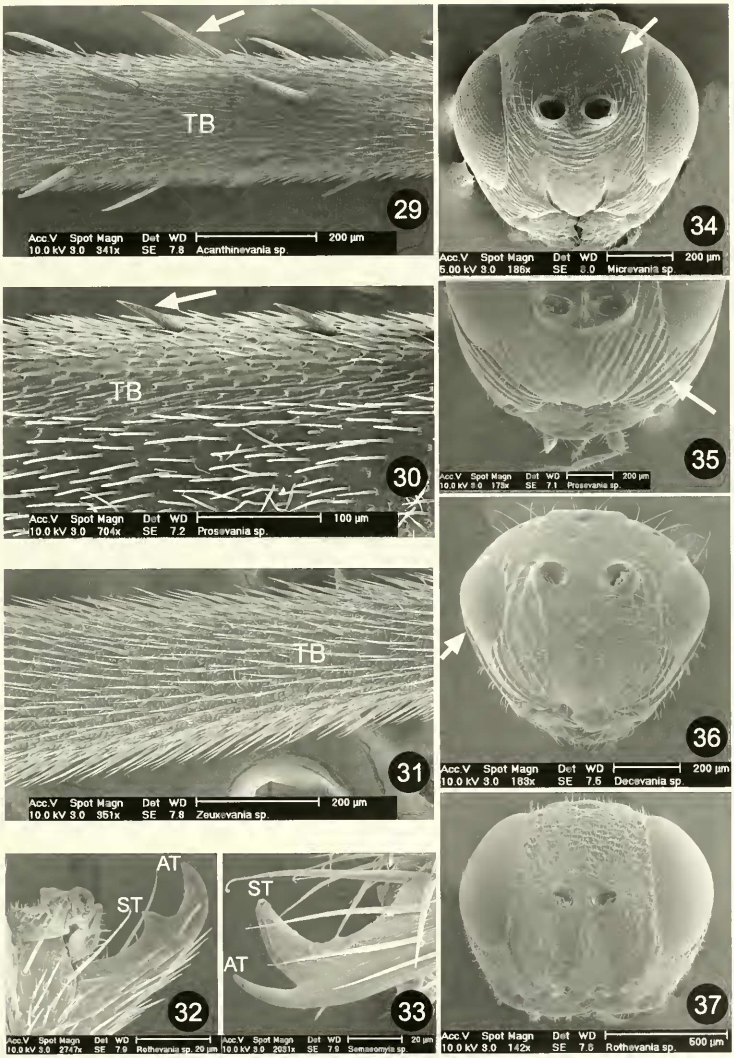
Description.—Female. *Head:* Equally high as wide, 0.5× as long as wide. Frons and facial area surrounding antennae sparsely setose and densely foveolate continuing ventrally with shallow foveae (~10) immediately beneath antennae. Clypeus and area immediately above clypeus without sculpturing. Widest distance between eyes 0.6× width of head. Postgenal area flat and nitid. Antenna arising midway on face; scape weakly punctate, setose dorsally, sparsely setose ventrally, 4.0× as long as pedicel; brown dorsally, light brown ventrally, with densely arranged placoid sensilla. Mandible brown to reddish brown. Eye silvery gray, widest dorsally, 2.2× higher than width at midheight. Ocelli clear yellow, nearly equal in size. Line between lateral ocelli 2.2× line between lateral ocellus and median ocellus.

Mesosoma: Dark brown to black, compact, broadly foveolate anteriorly becoming irregularly areolate posteriorly. Anterior pronotum and propleuron flat and nitid. Mesoscutum broadly foveolate, sparsely setose with yellow hairs, 2.3× wider than long. Tegula translucent light brown. Scutellum broadly foveolate, sparsely setose with yellow hairs, 3.0× wider than long. Metanotum 0.25× as long as scutellum. Lateral areas of metanotum and scutellum forming setose pits (at base of wings). Mesopleuron convex and coarsely foveolate ventrally, nitid dorsally within leg groove. Dorsal border of mesopleuron lined with broad foveae immediately ventral to mesopleural ridge. Ventral mesopleuron and metapleuron setose with silver hairs. Propodeum areolate, setose with silver hairs except bald in medial area where wings rest during expansion. Setae yellowish where petiole inserts into mesosoma. Legs brown, ~2.5× mesosoma height. Hind leg darker brown than mid and forelegs. Hind femur as long as hind tibia. Hind tibia as long as hind leg tarsomeres 1–5. Tibial spurs light brown, interior spur 1.3× as long as exterior spur. Each tarsomere with stiff spines apically. Tarsal claws 0.5× as long as tarsomere 5.

Wings: Hyaline, setose becoming more densely setose apically. Veins C, Sc+R, M+CU, 1M, 1RS, RS+M, 2RS, r, 3RS, 4RS, 1R1, 1CU-a, 1CU-b, m-cu, 1A, 1cu-a, 2A, 2CU, and 2cu-a brown, tubular. Veins 2M, 3M, r-m, and 3CU spectral. Hamuli consisting of 4 hooks (3 identical, fully curved hooks apically and 1 open hook basally). Jugal lobes present on both wings.

Metasoma: Petiole 3.0× longer than wide. Metasomal tergites 2–8 ovoid, brown, nitid.

Genitalia: Ovipositor short, at least 13× longer than wide, partially concealed within gaster. Ovipositor sheath with small cluster of short, stiff setae apically.



Figs. 29–37. SEM images of evaniid morphology, arrows indicate diagnostic characters. TB = tibia, AT = apical tooth, ST = subapical tooth. 29, *Acanthinevania* sp., hind tibia. 30, *Prosevania* sp., hind tibia. 31, *Zeuxevania* sp., hind tibia. 32, *Rothevania valdivianus*, tarsal claw. 33, *Semaeomyia* sp., tarsal claw. 34, *Microvania difficilis*, head. 35, *Prosevania* sp., head. 36, *Decevania* sp., head. 37, *Rothevania valdivianus*, head.

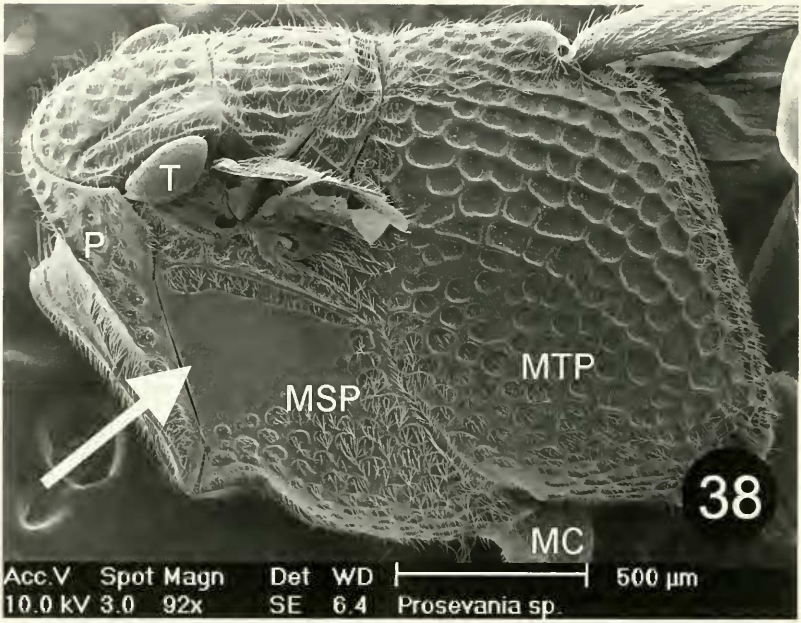


Fig. 38. SEM, *Prosevania* sp., mesopleuron. P = pronotum, MSP = mesopleuron, MTP = metapleuron, T = tegula, MC = midcoxa, arrow indicates flattened area.

Male.—Similar to female except flagellomeres slightly elongate and never swollen.

Biology.—Unknown.

Holotype.—Female, labeled "Sri Lanka: Mate. Dist.: Kibissa: 0.5 mi West of Sigiriya: jungle: Malaise trap [28-VI]-[4-VII]-1978, coll. K.V. Krombein, P. B. Karunaratne, T. Wijesinhe, V. Kulasekare." Deposited in the National Museum of Natural History, Washington DC.

Paratype.—Male labeled "Sri Lanka: Man. Dist.: Kokmotte Bungalow: 0.5 mi NE Wilpattu N.P.: voucher # 10777 C: 7-X-1977, coll. P. B. Karunaratne." Deposited with holotype.

Etymology.—The species is named as a tribute to Jeff and Amy Urbanus for their valued friendship and undying enthusiasm for the natural world.

Comments.—At least one other undescribed species exists from India. It is smaller (3.0–3.2 mm long) with slightly different propodeal sculpturing.

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